

“Do you believe in Evolution?”

This should be a NON-question, like “Do you believe in gravity?”

Science

A system of methods for gaining knowledge.

Built on the scientific method – the rigorous gathering and interpretation of evidence.

Seeks critical review; cannot be proven, but is disproven or revised with the discovery of contradictory evidence. A scientific question must be capable of being *disproven* with evidence.

The tone of science is ‘skepticism’. Scientists are deliberately skeptical as they search for means to disprove theories.

The realm of science is the study of those concepts which can be studied by the scientific method -- through questions, hypotheses, data gathering, etc.

A scientific question is only one which can be investigated through the gathering of evidence. (Not, for example, “What is truth?” or “What existed before the Big Bang?”) It is only a scientific question if it can be disproven with evidence.

Evolution is the foundation of our knowledge of biological science; evidence supports our interpretation, and it must be taught as science.

Religion

A philosophy or way of believing or a statement of faith.

Built on spiritual acceptance, religious ‘enlightenment’, personal awakening, or epiphany.

A belief system; religious organizations encourage acceptance.

Faith is defined as a belief that does not rest on proof or material evidence.

The tone of religion is ‘acceptance’. Most religious leaders promote acceptance, not questioning.

The realm of religion is not those ideas which seek to be proven experimentally, but instead the spiritual and philosophical realm.

Religious questions can be much broader and more philosophical, such as “What is truth?” and “What existed before the Big Bang?” since they do not require gathering evidence through the scientific method. “Is there a God?” cannot be scientifically determined.

“Creation Science” is not science, but a belief about a Biblical version of creation. It is inappropriate for a science classroom. (“Intelligent Design” or ID is a more recent version of Creation Science which claims that evolution could not have occurred in the world without the guidance of a supernatural power.)

Note: The general public thinks that a hypothesis becomes a theory if there is sufficient supporting evidence, and it might 'grow up' to become a law after years and years of gathering supporting evidence. That is incorrect use of vocabulary. A theory is powerful. It is inappropriate to use the phrase "... just a theory"

There is an important distinction between a *belief* and a *theory*. Students deserve to be taught vocabulary correctly so that the phrase "it's just a theory" is eliminated. (A theory is an explanation of *how* a scientific phenomenon occurs. A theory of gravity might be based on gravitons, for example. A theory of evolution could be based on survival of the fittest, adaptation over time, mutations, etc. -- all designed to explain what is observable -- that organisms evolve.)

Gravity
Theory: How gravity occurs

Evolution
Theory: How evolution occurs

The 'Debate' between scientists and religion is artificial. It is fueled by the media and extremists. Most scientists develop an 'awe' of the complexity and magnificence of the Universe that leads them to a spiritual relationship that does not interfere with their 'doing science'.

Note that the point of evolution is to explain the origin of species as they evolve over time; the goal is *not* to determine the origin of life.

In Oregon, it is clear that science, based on scientific (answerable) questions, collection of data, analysis and interpretation -- must be taught in science classes, and religious beliefs cannot be. However, religious beliefs can be discussed and analyzed (not proselytized) in social studies classes.

Resources for Learning and Teaching About Evolution

<http://www.ode.state.or.us/news/announcements/announcement.aspx?=852>

Oregon's official Department of Education stance on teaching Evolution and on Creation Science or Intelligent Design (Position Statement)

www.nsta.org/pbsevolution4/

Questions and Answers regarding evolution from the National Science Teachers Association

www.nsta.org/220/

Evolution resources from the National Science Teachers Association

www.nap.edu/catalog/5787.ntml

Full text of the book Teaching About Evolution and the Nature of Science, 1998, National Academy of Sciences, Washington, DC.

<http://www.nsta.org/159&psid=10>

Position statement from the National Science Teachers Association

Evolution.Berkeley.edu

Understanding Evolution

<http://www.astrosociety.org/education/publications/tnl/56/>

Age of the Universe

<http://www.pbs.org/wgbh/evolution/religion/faith/index.html>

PBS site that addresses how some reconcile the perceived conflict between faith and religion. Site includes a discussion of the personal perspectives from scientists who represent a range of faiths.